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(71) Applicant (for all designated States except US): UAB MGF "SVIESOS KONVERSLJA" [LT/LT]; Sauletekio al. 10, LT-10223 Vilnius (LT).

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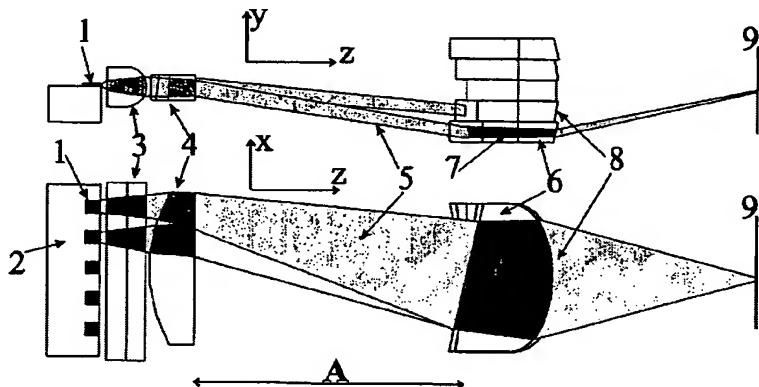
(75) Inventors/Applicants (for US only): GINIUNAS, Linas [LT/LT]; Sauletekio al. 10, LT-10223 Vilnius (LT). DANIELIUS, Romualdas [LT/LT]; Sauletekio al. 10, LT-10223 Vilnius (LT).

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(54) Title: BRIGHTNESS PRESERVING LASER BEAM SHAPER



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(57) **Abstract:** The current invention describes the method of making symmetrical radiation of extremely asymmetrical light sources, e.g. laser diode bars, using the shaper of three optical elements that preserve the brightness of the initial light source. The first element of the shaper - collimator of the fast axis - images the light source in the direction of the fast axis directly into the output plain of the shaper. The second and the third element of the shaper are the multi-segment elements that separate and optimally redistribute different beams and focus these in the direction of the slow axis. The surfaces of the shaper optical elements are described by the surfaces of the second and higher order, which enables compensation of different distortions, for instance field curvature aberration, distortion caused by the light source bending, etc. The shaper offers optimal order of secondary beam redistribution that has the least possible impact on the initial beam brightness. The device also offers the method for "smile" distortion compensation and the means of combining several light sources in the shaper using polarising and dichroic mirrors. In the case of laser diode stack it is proposed to employ the same beam shaping principle with individual multi-edged prism for each of the laser diode bars and one multi-segment element common for all laser diode bars.